INTERSPIRO

31268B01

SPIROGUIDE II

USER MANUAL

Breathing Apparatus with Digital Display
Wireless Heads-Up Display

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Wireless Heads-Up Display

The equipment is type tested by DEKRA EXAM GmbH, Dinnendahlstr. 9; 44809 Bochum, Germany. EC type examined (Directive 89/686/EEC) by DEKRA EXAM GmbH, Dinnendahlstr. 9; 44809 Bochum, Germany.

SpiroGuide II consists of:

- Breathing Apparatus Computer (BAC)
- Digital Display located at the pressure gauge
- QS II Breathing Apparatus
- Optional Heads-Up Display (HUD) located inside the face mask
- Optional fully integrated Automatic Distress Signal Unit (ADSU) / Personal Alert Safety System (PASS)

1 SAFETY NOTICE

The product must only be used with Interspiro cylinders:

Spirolite 3.4L, 6.7L, cylinder pack 323.4 or 326.7

Aluminum line 6.8L or 9.0L

Steel 4L or 6L.

ATTENTION! BREATHING APPARATUS WITH TWIN CYLINDER AND CYLINDER PACK CONFIGURATIONS: SPIROLITE 6,7L OR 326,7, COMPOSITE WITH ALUMINUM LINER 6,8L OR 9,0L AND STEEL CYLINDERS 4L OR 6L, EXCEEDS THE TOTAL WEIGHT LIMIT ACCORDING TO 6.6 IN EN 137:2006.

The product must only be used by personnel in good health and trained in the use of respiratory protective equipment. Individuals with beards or large sideburns may not obtain an adequate seal. The apparatus must be maintained, serviced and tested as described in this user manual, Interspiro service manuals and Interspiro test instructions.

INTERSPIRO IS NOT RESPONSIBLE FOR

- COMBINATIONS OF PRODUCTS, UNLESS PUT TO MARKET BY INTERSPIRO
- CHANGES OR ADAPTATIONS MADE TO THE PRODUCT BY A THIRD PARTY

Changes to this document - necessitated by typographical errors, inaccuracies of current information or improvements and changes of equipment - may be made at any time without prior notice. Always refer to www.interspiro.com for product updates, document updates and service bulletins. Exposure to extreme conditions, may require different procedures rather than those described in this manual. The guarantees and warranties specified in the conditions of sale are not extended by this Safety Notice.

The breathing air with which the cylinders are charged must meet the requirements according to EN 12021, being free from oil, toxic substances and having low humidity. To prevent accumulation of humidity, the cylinders should be slowly discharged at regular intervals; e.g., after it has been charged 10 times. Interspiro provides a humidity drain valve plug for the cylinder valve.

The duration of a compressed air breathing apparatus depends on the volume of air in the compressed air cylinder(s) and the air consumption, which is specific to the wearer and is affected by the work load. When taking air from the extra air connection, which some models are equipped with, the air consumption increases and the duration of the apparatus decreases.

When operating with two separate independently-valved cylinders, both cylinders must be charged with similar working pressures. Always open both cylinder valves when pressurizing the breathing apparatus and ensure that both cylinder valves are kept open during the use of the apparatus.

If fitted with a mechanical warning whistle, that warning will be activated at a slightly different pressure than the low air warning triggered by the BAC. For safety reasons, the first warning activated should be heeded.

If the ambient temperature is 0°C or below, external icing can cause malfunction of the mechanical warning whistle. Under such circumstances, the pressure gauge must be read more frequently.

If the self contained breathing apparatus is to be used in conjunction with other personal protective equipment it is important to ensure that the additional personal protective equipment is compatible with the breathing apparatus and does not impair the full protection of the respiratory protective device.

Examples of dangers which may require the use of additional personal protective equipment:

-Liquids, steam or gases which can damage the skin.

-Pollutants absorptive by skin

-Thermal radiation

-Mechanical effects

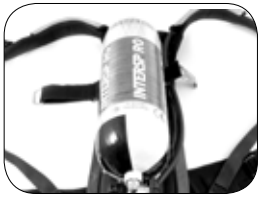
-Explosive environments

-Oxygen-enriched breathing air.

2 CYLINDER MOUNTING

SINGLE CYLINDER

1. Check that the cylinder strap buckle is positioned with the buckle as close to the backplate as possible. Place the cylinder on the backplate.
2. Check the connection O-ring and screw the cylinder valve hand tight to the cylinder connection of the manifold block.



NOTE! FOR CYLINDER QUICK COUPLING SEE PAGE 8.

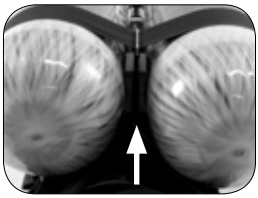
3. Fasten cylinder strap buckle around the cylinder and hook together with the buckle. Adjust the length of the strap if needed. Do not over tighten. If the strap is over tightened the buckle and backplate will be damaged.
4. Close the lever on the buckle. Make sure that the locking tab has locked the lever in the closed position. (To release the cylinder buckle the locking tab must be pressed down.)

TWIN CYLINDERS

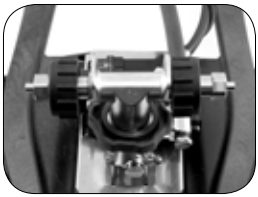
ATTENTION! WHEN OPERATING WITH TWO SEPARATE INDEPENDENTLY-VALVED CYLINDERS, BOTH CYLINDERS MUST BE CHARGED WITH SIMILAR WORKING PRESSURES. ALWAYS OPEN BOTH CYLINDER VALVES WHEN PRESSURIZING THE BREATHING APPARATUS AND ENSURE THAT BOTH CYLINDER VALVES ARE KEPT OPEN DURING THE USE OF THE APPARATUS.

1. If previously used for single cylinder start by disengaging the cylinder strap from the four lugs on the backplate.

2. Check that the cylinder strap is positioned with the buckle as close to the backplate as possible.
3. If applicable, mount the strap holder and the cylinder distance piece.



4. Check the connection O-ring and screw the T-piece to the cylinder connection of the manifold block - Do not tighten.



5. Place the cylinders on the backplate with the strap holder between the cylinders. Check that the hoses are positioned between the cylinders and not squeezed between the cylinders and backplate.

6. Check the connection O-rings and screw the cylinder valves hand tight to the cylinder connections of the T-piece.
7. Tighten the T-piece to the manifold block by hand.
8. Fasten the cylinder strap buckle around the cylinders and hook together with the buckle. Adjust the length of the strap if needed. Do not over tighten. If the strap is over tightened the buckle and backplate will be damaged.
9. Close the lever of the buckle. Make sure that the locking tab has locked the lever in the closed position. (To release the cylinder buckle the locking tab must be pressed down.)

CYLINDER PACK

Mounting

1. Place the cylinder pack on a flat surface with the cylinder valve towards you.
2. Check the connection O-ring and screw the cylinder valve hand-tight to the cylinder connection of the manifold block.

NOTE! FOR CYLINDER QUICK COUPLING SEE PAGE 8.

3. Fit the holes of the cylinder bracket onto the guide washers and push the backplate away from you until the harness clicks in position. Check that the cylinder pack is mounted properly by lifting the harness carefully in the upper and lower part of the backplate.

4. If applicable mount the rescue hose according to the pictures below and fasten the Y-connection with the rescue hose holder.

Dismounting

1. Unscrew the cylinder connection of the manifold block from the cylinder valve.
2. Push the locking arm on the upper part of cylinder bracket and pull the harness towards you at the same time.

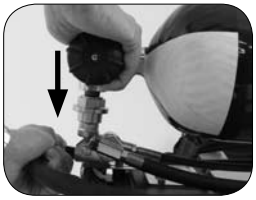
Rescue hose usage

To use the rescue hose, grab the Y-connection and pull the hose lose from the harness. The protective covers on the couplings must be removed before connecting the hoses.

QUICK COUPLING OPTION

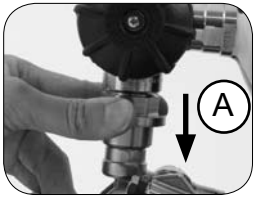
Connection

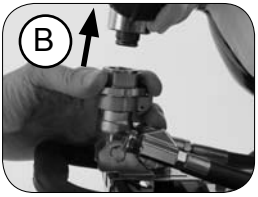
Align the adapter in the cylinder valve with the connection of the manifold block. Push down the cylinder until it "clicks" together with the manifold.



Disconnection

Push the ring of the quick coupling towards the backplate (A). Lift away the cylinder (B).





3 POSITIVE PRESSURE

AMBIENT AIR VERSION

Positive pressure is activated by closing the ambient air hatch by pushing the exhalation valve cover against the face mask. To shut off positive pressure and breathe ambient air, simultaneously press down the indicator arm and push the exhalation valve cover away from the face mask. [Fig. 1 and Fig. 2]

Fig. 1 Activated positive pressure

Fig. 2 Ambient air mode

FIRST BREATH VERSION

Positive pressure is automatically activated by the first breath and can be switched off manually by pushing the lifting arm on the breathing valve away from the diaphragm cover. [Fig. 3 and 4]

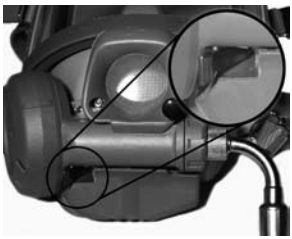


Fig. 3 Activated positive pressure

Fig. 4 Positive pressure switched off

4 CONNECTING / DISCONNECTING BREATHING VALVE & HUD

CONNECTING THE BREATHING VALVE

1. Insert the breathing valve into the face mask and move the external speech cone down to lock the breathing valve in position. In the correct position, the lower lip of the speech cone covers the serial number on the breathing valve.

2. Tighten the hand screw.

ATTENTION! WHEN PUSHING THE BREATHING VALVE IN PLACE, THE FINGERS SHOULD NOT BE POSITIONED ON THE INTERNAL SPEECH DIAPHRAGM AS THIS CAN CAUSE DAMAGE TO IT.
ON AMBIENT AIR VERSION, CONNECT THE BREATHING VALVE WITH THE AMBIENT AIR HATCH CLOSED.

3. Connect the breathing valve to the breathing hose.

INSTALLING THE WIRELESS HUD

1. Place one side of the HUD on an angle inside the mask and press down.
2. Make sure the right and left side of the HUD are securely seated in the rounded areas of the mask rubber.

DISCONNECTING THE BREATHING VALVE

1. Loosen the hand screw on the external speech cone. Pull out the hand screw and move the external speech cone upwards to release the breathing valve.
2. Pull out the breathing valve from the face mask.
3. Disconnect the breathing valve from the breathing hose.

REMOVING THE WIRELESS HUD

1. Lift one end of the HUD and remove it from the mask.

5 ADJUSTING SIZE

NOTE! WHEN STANDING STRAIGHT WITH THE BREATHING APPARATUS DONNED THE MAJORITY OF THE WEIGHT SHALL BE CARRIED ON THE HIPS AND NOT THE SHOULDERS.

To adjust the height of the hip belt, push the red buttons under the hip belt together and slide the complete hip belt up or down to the correct size.

The harness can be adjusted into four different sizes. Size indications are available on both the front and backside of the harness.

6 DONNING

NOTE! THIS SECTION DESCRIBES HOW TO DON THE APPARATUS PERFORMING A "SHORT TEST" DURING THE START-UP. FURTHER INFORMATION REGARDING THE START-UP TEST AND INSTRUCTIONS FOR PERFORMING THE "FULL TEST" ARE GIVEN IN SECTION 7.

1. Loosen the shoulder straps and the waist belt and put on the apparatus.
2. Place the neck strap over the head.
3. Fasten the waist belt buckle and tighten, ensuring that the majority of the weight is carried on the waist and not the shoulders.

4. Adjust the shoulder straps and tuck in any loose straps. If applicable fasten the chest strap and tighten, tuck in any loose straps

5. Switch off positive pressure. See section 3 for instructions.
6. Open the cylinder valve fully. The apparatus now starts to perform the start-up test.
7. Check that the HUD is fully pushed down inside the mask. Fit the face mask onto the head by first lift the lower part of the head harness with both thumbs, put the chin in first and then pull the head harness over the head.

8. Starting with the two at the bottom, tighten the straps on the head harness. Do not over-tighten the head harness.

9. On the version with ambient air hatch, activate the positive pressure. On the version with first breath activation, the positive pressure activates automatically.
10. Check the Digital Display and confirm "TEST OK" or failure indication (see section 7) by pressing the backlight button (section 8, Fig. 5) on the display.
11. Hold your breath and listen for leakage; adjust the face mask if necessary.

7 START-UP TEST

"SHORT TEST" AND "FULL TEST"

When the cylinder valve is opened, an automatic start-up check is performed. Depending on user interaction, either a "Short Test" or a "Full Test" is performed.

The Short Test is performed in accordance with the section "Performing the Short Test" and automatically performs the following tests:

- Cylinder pressure above pre-set level (configuration dependent)
- Battery has at least two hours of operation
- Electronic systems are working

When the test is complete, the test results must be confirmed by the user. See the section titled "Test Results" below.

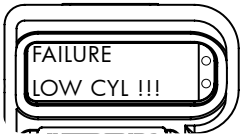
The Full Test is performed in accordance with the section "Performing the Full Test" and automatically performs the following tests:

- Cylinder pressure above pre-set level (configuration dependent)
- Battery has at least two hours of operation
- Electronic systems are working
- Leak tightness
- Air flow capacity

When the test is complete, the test results must be confirmed by the user. See the section titled "Test Results," below.

TEST RESULTS

When the test is finalized, the display reads "TEST OK", or shows a failure indication. Should there be more than one failure, the indications are given in sequence. Pressing the backlight button (section 8, Fig. 5) toggles to Run mode or to the next failure indication. If the backlight is not lit, the first press on the backlight button will light the backlight and a second press will toggle to Run mode or to the next failure.



FAILURE INDICATION	EXPLANATION
LOW CYL !!!	CYLINDER PRESSURE BELOW PRE-SET LEVEL (CONFIGURATION DEPENDENT)
LOW BATT	BATTERY HAS LESS THAN 2 HOURS OF OPERATION [1]
LEAKAGE	THE UNIT FAILED THE LEAK TIGHTNESS TEST [2]
CAPACITY	THE UNIT FAILED THE AIR FLOW CAPACITY TEST [2]
ADSU/PASS	THE UNIT FAILED THE MOVEMENT SENSOR TEST [2]

[1] Replace battery immediately after the current operation or if possible before the operation is continued.

[2] Only conducted if Full Test is performed

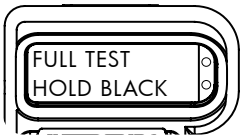
ATTENTION! ALWAYS FOLLOW YOUR ORGANIZATION'S POLICY TO DETERMINE WHETHER AN OPERATION MAY BE PERFORMED AFTER THE OCCURRENCE OF FAILURE INDICATION(S).

PERFORMING THE "SHORT TEST"

1. Open the cylinder valve fully. The display reads according to the figure below.

2. Check the sound.

3. The display reads according to the figure below for three seconds.



4. The display reads according to the figure below for two seconds.

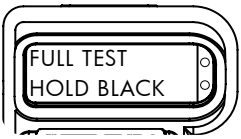
5. The display will stop and show the result of the test until the backlight button is pressed. See the section titled "Test Results".

PERFORMING THE "FULL TEST"

1. Open the cylinder valve fully. The display reads according to the figure below.

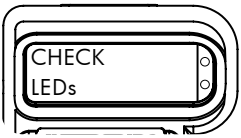
2. Check the sound.

3. Press the backlight button (section 8, Fig. 5) during the three seconds that the display reads according to the figure below.



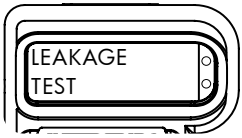
4. The display reads according to the figure below for two seconds.

5. Check the yellow and red LEDs (section 8, Fig. 5) on the display and the yellow and red BAC-light. If applicable check green, yellow and red LEDs on the HUD.

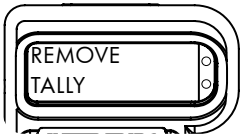


6. Close the cylinder valve and press the backlight button. Make sure to completely close the cylinder valve before pressing the backlight button.

7. The SpiroGuide II performs a leakage test.

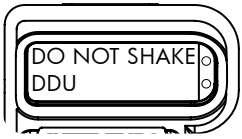


8. For Tally key activated SpiroGuide II the display will read according to the figure below. If the tally is not inserted from the start the display will first read “INSERT TALLY“ and then “REMOVE TALLY“ when the tally has been inserted.



9. Shake the Digital Display Unit when the display reads according to the figure below. Alarm sound will stop when DDU has been shaken

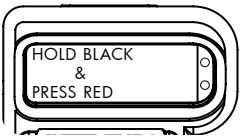
10. Do not move the Digital Display unit when the display reads according to the figure below. The pre alarm sound and full alarm sound is tested



11. Press the red button when the display reads according to the figure below.

12. Panic alarm sound is tested.

13. For SpiroGuide II with SpiroLink activated, press red and black buttons to test the evacuation alarm when the display reads according to the figure below.

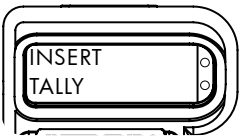


14. The evacuation sound alarm is tested while the display reads according to figure below

15. Activate the positive pressure of the breathing valve to exhaust the air from the system when the display reads according to the figure below.

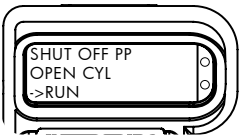
16. If activated, the Display indicates the electronic low pressure warning setting while the sound of the electronic whistle is tested .

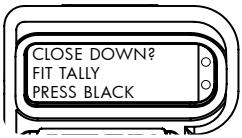
17. Replace Tally in the DDU if applicable



18. The display will stop and show the results of the test until the backlight button is pressed. See the section titled “Test Results” above.

19. The display will toggle between the two figures below. To shut down the SpiroGuide II press the backlight button. To go into Run mode, switch off the positive pressure of the breathing valve and open the cylinder valve





NOTE!

* WHEN ACTIVATING THE POSITIVE PRESSURE, THE MASK SHOULD NOT BE PRESSED AGAINST A SURFACE OR HELD WITH THE DIAPHRAGM HOUSING POINTING EITHER UPWARDS OR DOWNWARDS (SEE FIGURE BELOW). HOLDING THE MASK IN AN INCORRECT POSITION MAY AFFECT THE RESULTS OF THE CAPACITY TEST.

CORRECT!

* IF NOT ALL AIR IS EXHAUSTED DURING THE CAPACITY TEST, THE DISPLAY WILL READ THE SAME AS POINT 8 ABOVE UNTIL IT IS ACKNOWLEDGED BY PRESSING THE BACKLIGHT BUTTON.

8 DURING USE

DIGITAL DISPLAY

Fig. 5

When the unit is in Run mode with the ADSU/PASS activated (see section 10), the yellow LED flashes.

During use, the Digital Display can show three different values:

1. Cylinder pressure — in Bar or PSI
2. Calculated remaining time — in Minutes
3. Absorbed temperature — in Celsius or Fahrenheit
4. Cylinder pressure graph — in quarters

Depending on the configuration, the display can show one, two, three or all four of these values. Furthermore, either of these four values can be shown as the default, second third and fourth priority value.

Pressing the backlight button (Fig. 5) activates the backlight of the display for four seconds. Pressing the backlight button once more while the backlight is lit toggles to the next value according to configured priorities.
If only one value is shown, there is no toggle function and the backlight button works as a backlight only.

Pressing the backlight button repeatedly toggles between values. When the backlight is switched off after four seconds the display will always show the default value.

During use, the remaining air time is calculated based on the previous air consumption. Since the value is calculated, the displayed time can be both shorter or longer than the actual remaining time, depending on the previous and future work load and rate of breathing.

The remaining time information must only be used as a complement to the cylinder pressure information. Low air warnings must always be heeded, regardless of the remaining time indication.

Until the first value is calculated from the air consumption, the display shows "CALC ...". The first value is displayed when there has been a significant pressure drop, normally after one to two minutes of breathing.

The remaining time is calculated to the activation of the low air warning.

The unit can be configured to have a heat alarm. When the absorbed temperature has reached the trigger value, the alarm is activated. An audible beep sounds, the display alternates to show ''TEMP!!!'' and the display and main BAC LED flash red.

A battery symbol is always shown on the Digital Display. The symbol shows the battery capacity of the BAC batteries in four steps. With the Low Battery warning the symbol starts to flash.

TURN AROUND PRESSURE REFERENCE POINTS (TAP REFX) (OPTIONAL)

TAP is a tool for operations when working on one and the same spot. The TAP value is based on the initial cylinder pressure and the air consumption to reach the spot where the TAP is calculated.

To calculate TAP, press and hold the backlight button (section 8, Fig. 5) for 5 seconds until the display reads TAP REFA xx bar.
To recalculate TAP, press and hold the backlight button (section 8, Fig. 5) for 5 seconds until the display reads TAP REFB xx bar, each new calculation gets a new letter.

HEADS-UP DISPLAY (HUD) - OPTIONAL

A light sensor automatically adjusts the brightness of the LEDs according to the ambient light conditions. This may take up to 10 seconds.

CYLINDER PRESSURE INDICATION

100%	-	75%	GREEN, YELLOW, YELLOW, RED IS LIT
75%	-	50%	YELLOW, YELLOW, RED IS LIT
50%	-	LOW AIR	YELLOW, RED IS LIT
LOW AIR	-	0	RED IS FLASHING

THE DEFAULT SETTING FOR "LOW AIR" IS 55 BAR.

The HUD can be configured with a different light sequence.

If the pressure changes quickly, there may be a delay of 2 seconds until the cylinder pressure information is updated in the HUD. During normal use (breathing) this is not noticeable.

WARNING INDICATIONS

BATTERY WARNING

BATTERY WARNING	YELLOW IS FLASHING

ATTENTION!: WHEN A BATTERY WARNING IS GIVEN, THE BATTERY MUST BE REPLACED IMMEDIATELY AFTER THE CURRENT OPERATION.

When the battery warning activates, there are at least 2 hours of operation left. Refer to section 13 for instructions about determining low battery in HUD and BAC, and about battery replacement.

SHUTDOWN

On the left side, the four LEDs flash simultaneously two times. This occurs when the unit is depressurized.

OPTIONAL WARNINGS

ADSU/PASS PRE-ALARM (SEE SECTION 10)	RED IS FLASHING
ADSU/PASS ALARM (SEE SECTION 10)	RED IS LIT
INTERNAL EVACUATION SIGNAL (SEE SECTION 10)	RED IS LIT

LINKING THE HUD

The HUD must be linked together with the SCBA (BAC) before use. The linking only needs to be performed once as long as the same SCBA (BAC) and HUD will be used together. If a SCBA will be used with different HUDs it has to be linked before each use.

The linking of the HUD can only be performed with the SCBA unpressurized.

1. Press and hold the black button on the Digital Display Unit until the display reads “CONNECTING”.
2. Place the magnet located on the Tally Key (Fig. 5) to the side of the HUD having two LEDs, the right hand side when wearing the mask. The red and yellow LED lights up.

3. When removing the Tally key the red light goes out and the yellow continues. The HUD and BAC are now searching for each other.
4. Within approximately 20 seconds the HUD and BAC will link. The BAC beeps, the Digital display reads “HUD CONNECTED” and all six LEDs in the HUD flash two times.

WARNING! IF NOT ALL LEDS ON THE HUD ARE LIT IT MUST BE IMMEDIATELY BE REMOVED FROM SERVICE.

5. Press and hold the black button on the Digital display until it switches off.

CHECK HUD LINK

The HUD link can be checked to ensure that the HUD is linked to the correct SpiroGuide II.

To check the HUD link, hold the backlight button for two seconds, release it for one second and then hold it again for two seconds. After the Backlight button has been released, the two LED lights on the righ hand side of the HUD will start to flash if it is linked to the SpiroGuide II unit.

NOTE: ONLY ONE USER CAN CHECK THE HUD LINK AT THE TIME. IF SEVERAL USERS TEST THE HUD LINK AT ONCE IT WILL BE IMPOSSILBLE TO TELL IF THE HUD IS LINKED TO THE CORRECT SPIROGUIDE II OR NOT.

BREATHING APPARATUS COMPUTER (BAC)

The BAC is measuring the pressure and supplying the information to the Digital Display and HUD. It logs all usage data which can be accessed with a PC interface (optional).

During Run mode, the main LED flashes yellow as a position light.

In addition to the main LED, there are two yellow LEDs for added visibility.

9 CYLINDER PRESSURE WARNINGS

LOW AIR WARNING

Default value is set to 55 +/- 5 bar. It can be configured to a higher pressure (up to 75 bar).

LOW AIR WARNING INDICATION

HUD flashes the red LED or according to configured settings (if fitted with HUD)

BAC emits a warning sound

Main LED of the BAC flashes red

Display LED flashes red

MUTABLE LOW AIR WARNING (OPTIONAL)

Mute the low air warning for one minute by pressing the backlight button (section 8)

TURN-BACK SIGNAL (OPTIONAL)

It can be set as a static value between 75 and 175 bar or as a dynamic value based on the initial cylinder pressure.

At this level the display backlight turns red and is automatically lit for 10 seconds.

If the cylinder pressure increases above the set level, the turn-back signal is re-set.

If fitted and function activated, the HUD flashes (the active pressure indication LEDs) for 10 seconds.

NOTE: WHEN DEPRESSURIZING THE UNIT RAPIDLY AFTER USE, THE SPIROGUIDE II SOMETIMES SHUTS DOWN WITHOUT ANY LOW AIR WARNING OR TURN BACK SIGNAL.

REDUCED VOLUME (OPTIONAL)

To reduce volume when for example working in gas tight suits, pressurize the SpiroGuide II and press the panic button when the display reads as shown below.

Press backlight button when the display reads as shown below.

10 AUTOMATIC DISTRESS SIGNAL UNIT(ADSU)- (OPTIONAL)

ACTIVATION/DEACTIVATION AND ALARM RE-SET

VERSION WITH TALLY KEY (ADSU)

Remove the Tally by pulling it straight out from the display unit to activate the ADSU. Once in alarm mode the ADSU can only be re-set by inserting the Tally.

VERSION WITHOUT TALLY KEY (PASS) – PRESSURE STARTED

The ADSU is activated when the unit is pressurised.

To re-set the alarm first, press and hold the backlight button and then press the panic button. To turn it off, de-pressurize the unit and then first press and hold the backlight button and then press the panic button.

DURING USE

The yellow LED on the Digital Display starts to flash and the BAC beeps when the ADSU is in sensing mode. When there is a lack of motion for 30 seconds the ADSU will go into pre-alarm. This is indicated by an escalating audible signal from the BAC and alternate flashing of the yellow and red LEDs on the Digital Display and the main LED of the BAC.

After the pre-alarm, the unit enters alarm mode.

When activated, the unit may be put into alarm mode at any time by pressing the panic button.

In alarm mode the BAC emits a loud audible signal, the yellow and red LED on the Digital Display will alternate, the backlight of the display flashes yellow and red and the main LED on the BAC flashes red.

INTERNAL EVACUATION SIGNAL

This function is configuration dependent and only available on the version with the tally key. To activate, press and hold the backlight button and then press the panic button.

The signal is the same as the alarm mode described above, but with a different intermittent warning sound.

11 REMOVING THE APPARATUS

1. Switch off the positive pressure. Refer to section 3.
2. Open the buckles to release the head harness, loosen the strap and remove the face mask.
3. Close the cylinder valve.

NOTE: TO PREVENT UNINTENTIONAL CLOSING OF THE CYLINDER VALVE, THE HAND WHEEL MUST BE PUSHED IN BEFORE IT CAN BE TURNED.

4. If applicable unfasten the chest buckle.
5. Unfasten the waist belt buckle and loosen the shoulder straps.
6. Remove the apparatus and activate the positive pressure to purge air from the system. Deactivate the Automatic Distress Signal Unit as described in section 10.
7. Disconnect the HUD (if fitted) according section 4.

12 CLEANING AND DISINFECTING

1. Open the cylinder valve and check that there is pressure in the system before cleaning.

NOTE: HAVING THE CYLINDER VALVE OPEN PREVENTS WATER FROM ENTERING THE SYSTEM AND BUBBLES WILL INDICATE ANY LEAKS IN THE SYSTEM.

2. Place the apparatus except face mask and breathing valve, pressure gauge and warning whistle (if fitted) into clean water.
3. Clean the apparatus with a brush and Curacid PSA Rinse or equivalent.
5. Rinse the apparatus in clean water.
6. Dry the apparatus and close the cylinder valve. Activate positive pressure to purge air from the system.

FACE MASK

Clean and disinfect as necessary after use.

1. Disconnect the breathing valve as described in section 4.
2. Wash the face mask in lukewarm water (maximum 40° C) with Curacid PSA Rinse or equivalent.
3. Disinfect the face mask with Curacid PSA Rapid or equivalent. Follow the instructions supplied with the disinfectant.
4. Rinse the face mask thoroughly with clean water.
5. Shake the mask to remove excess water and dry the mask, avoiding direct heat and sunlight.

Refer to "Extended cleaning and disinfection", available on www.interspiro.com/support, for removal and cleaning of the exhalation valve on extraordinary occasions

BREATHING VALVE

ATTENTION! WHEN CLEANING THE BREATHING VALVE IT MUST BE COMPLETELY DRY BEFORE IT IS REASSEMBLED AND PUT BACK INTO SERVICE. REMAINING WATER MIGHT FORM ICE ON VITAL PARTS, RESULTING IN MALFUNCTION OF THE BREATHING VALVE.

1. Clean the outside of the breathing valve with a cloth and lukewarm water (maximum 40° C) with Curacid PSA Rinse or equivalent.

   Alternatively the breathing valve can be submerged and cleaned in lukewarm water (maximum 40° C) with Curacid PSA Rinse or equivalent. Sealing plug (tool #31731-51) and breathing hose must be mounted to prevent water from entering the breathing valve.
2. Wipe the breathing valve clean with a cloth and clean water. Or rinse the breathing valve in clean water with the sealing plug and breathing hose mounted.
3. Dry the breathing valve

Refer to "Extended cleaning and disinfection", available on www.interspiro.com/support, for disassembling and cleaning of the breathing valve on extraordinary occasions.

WIRELESS HUD

Clean with a damp cloth and warm water. Do not use cleaning solvents.

13 SERVICE AND TESTING

After each use:

1. Perform a Full Test, see section 7.
2. Decrease the cylinder pressure slowly and check that the cylinder pressure warning(s) are given at configured pressure level(s).

Perform periodic service in accordance with section 18.

14 BATTERIES

Always use the Duracell MN2400 and Energizer E92 AAA alkaline batteries. Interspiro assumes no liability for mechanical, electrical or any other type of battery failure.

Do not mix battery manufacturers or old with new batteries.

HUD AND BAC BATTERY WARNINGS

During use, battery warning is given as described in section 7. After a battery warning indication the unit can be depressurized to determine if the batteries in the HUD, BAC or both need replacing.

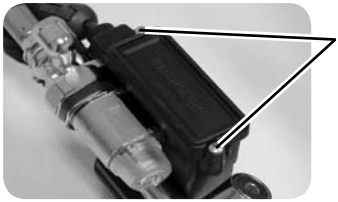
When the unit is depressurized and the BAC flashes the red LED and gives a slow rate of beeps, this indicates low battery in the BAC. When the unit is depressurized and the HUD flashes the yellow battery LED, this indicates low battery in the HUD. The electronics on a unit with low battery will not activate when pressurised.

REPLACING BAC BATTERY

ATTENTION! BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS.

ATTENTION! DOWNLOAD THE USER LOG PRIOR TO REPLACING THE BATTERIES. AFTER REPLACING BATTERIES, CHECK THE DATE AND TIME SETTING OF THE UNIT AND RE-SET IF NECESSARY. IF THE CURRENT IS BROKEN FOR MORE THAN 1.5 MINUTES, DATE AND CLOCK SETTINGS IN THE BAC WILL BE LOST AND EVENTS WILL NOT BE LOGGED CORRECTLY.

1. Remove the two screws on the battery cover with a cross-slotted (Phillips) screwdriver.



2. Remove the battery cover. Next remove the battery pack by lifting the handle.

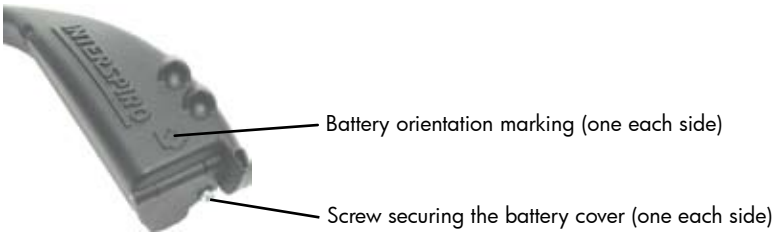
3. Insert three new AAA batteries in the direction of the markings on the inside of the battery pack.

4. Reassemble the battery pack and insert into the BAC. Orientate the battery pack according to the markings inside the BAC and on the sides of the battery pack. If the battery pack is correctly positioned, the BAC beeps when connected to the batteries.
5. Replace the battery cover and gently tighten for even gasket pressure, ensuring a good seal. Do not over-tighten the screws.

REPLACING WIRELESS HUD BATTERIES

1. Remove the HUD from the face mask. Refer to section 4.
2. Using a Phillips screwdriver, unscrew the screw securing the battery cover.
3. Lift up the locking tab and open the battery compartment cover.
4. Insert a AAA battery in the direction of the marking on the HUD.
5. Close the cover and reassemble the cover with the screw. Gently tighten for even gasket pressure ensuring a good seal. Do not over-tighten.
6. Repeat the same procedure for the second battery on the other side.

When the batteries are installed, the HUD will flash all six LEDs five times.



15 STORAGE

Store in a cool, dry and dust-free environment. Protect rubber parts from direct sunlight, UV radiation and direct heat. When the regulator unit is not connected, the cylinder valve should always have a protective plug.

The unit should be stored with the face mask/breathing valve in the position for activated positive pressure. Refer to section 3.

16 EXTRA AIR CONNECTION

Some models are equipped with an extra air connection which can be used to:

1. Connect to a chemical suit ventilation system
2. Connect a rescue hose between two apparatuses
3. Connect an extra mask
4. Connect the resuscitation mask Revitox
5. Feed the apparatus from an external air source

When taking air from the apparatus, point 1-4 above, the air consumption increases and the duration of the apparatus decreases.

A special female coupling with a non-return valve opener must be used when taking air from the apparatus, point 1-4 above. This device opens the non-return valve in the male connection on the apparatus.

ATTENTION! WHEN FEEDING THE APPARATUS FROM AN EXTERNAL AIR SOURCE, THIS KIND OF FEMALE COUPLING MUST NOT BE USED. IN THIS APPLICATION THE NON-RETURN VALVE IN THE MALE CONNECTION MUST BE ABLE TO CLOSE IN CASE OF DISRUPTION IN AIR SUPPLY FROM THE EXTERNAL SOURCE.

17 USAGE WITH AIRLINE SYSTEM

The instructions in Section 1, Section 2 - "Cylinder mounting - single cylinder" and Sections 3 - 7 apply to usage with airline system.

The airline supply hose is connected to the male coupling on manifold located on the right-hand side (as worn) of the waist belt.

When operating on supplied air from the airline hose, the cylinder valve on the SCBA should be closed.

Should the supply from the airline hose be disrupted, open the cylinder valve fully of the SCBA.

When the cylinder valve has been opened, the user must immediately leave the hazardous area. Disconnect the airline hose if necessary.

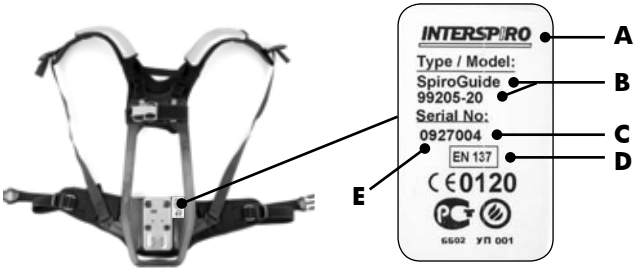
When operated with cylinder valve opened and used in conjunction with an automatic switch between the airline supply and SCBA cylinder, the following instructions should be observed.

1. Read and note the pressure reading on the pressure gauge of the SCBA.
2. Connect the quick coupling of the SCBA to the airline supply hose. The higher pressure in the supply hose should shut off the supply from the SCBA.
3. After two minutes, read the pressure displayed on the pressure gauge again. During the elapsed time, there should be no measurable drop in pressure on the gauge. This check will indicate that the higher pressure in the airline supply hose is preventing air from being taken from the SCBA cylinder.
4. During usage in the hazardous environment, periodically check the pressure displayed on the gauge and if a decrease is noted discontinue use. Disconnect

the airline hose and exit to a safe area using the bail-out set and an escape apparatus.

18 MARKINGS

- **A.** Manufacturer
- **B.** Model designation
- **C.** Serial No
- **D.** European standard and classification
- **E.** Year of manufacture

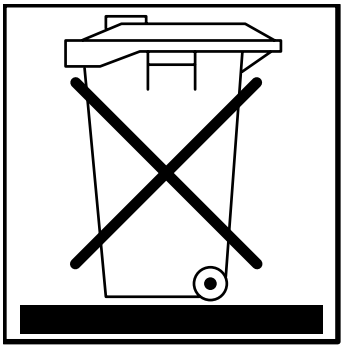


19 SERVICE AND TESTING SCHEDULE

Service and testing shall be performed according to Service and testing schedule 97307. Visit www.interspiro.com for latest revision.

THIS PRODUCT SHOULD NOT BE DISPOSED OF IN GENERAL MUNICIPAL WASTE

1. The crossed-out wheeled bin symbol, on this product, its packaging or instructions indicates that the product was manufactured after 13/8/05 and is subject to European Community directive 2002/96/EC, issued 27/1/03, on the correct handling of Waste Electronic and Electrical Equipment (WEEE).
2. WEEE must not be disposed of in general waste and should be collected and disposed of by waste collectors appropriately licensed for special waste.
3. This product contains substances deemed potentially harmful to the environment or human health if disposed of incorrectly.



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Publ. No. 31268801